

DrillLine



# DRILLFORCE MEISTER

[www.tungaloy.com](http://www.tungaloy.com)

Tungaloy Report No. 509S1-G

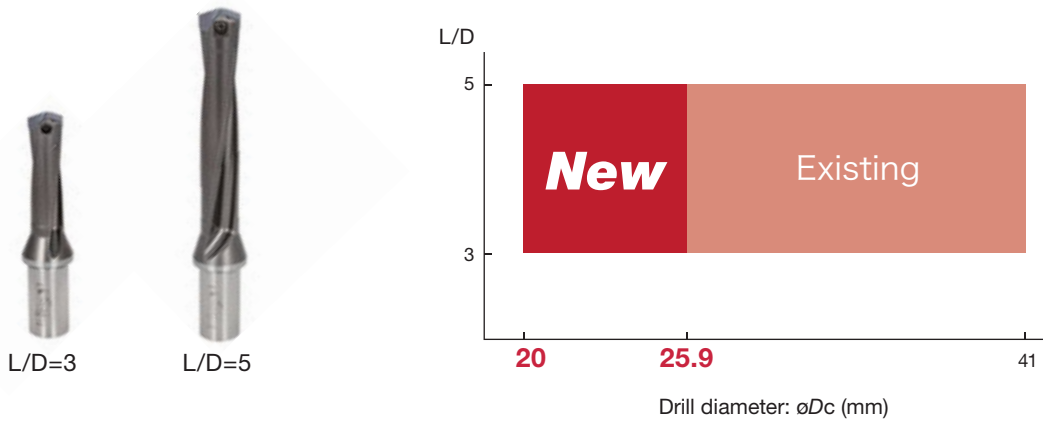
Expansion of the DrillForceMeister line with a wider range of diameters - **ø20 - 25.9 mm**



**INDUSTRY 4.0**  
*FEED the SPEED!*

## Line-up expansion of $\varnothing 20 - \varnothing 25.9$ mm

Based on the big success of the existing range of DrillForceMeister and following market demand, Tungaloy has expanded the range of diameters. All heads are coated with our excellent wear resistant PVD coating, AH725.



### Unique clamping system

Easy and quick yet rigid and reliable clamping method for excellent hole quality and long tool life

**DrillForceMeister** has a large contact area, thus it strongly withstands radical forces and low rigidity workpiece clamping.



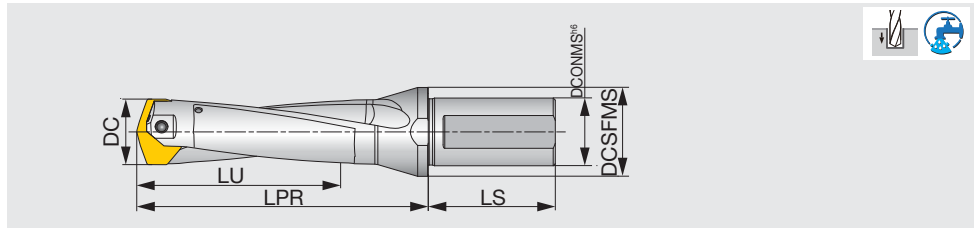
### Typical examples of unbalanced machining

Inclined exit	Inclined surface	Thin metal machining	Jump hole machining

## TIS L/D=3

Head indexable drill

**New**



Designation	DC	DCONMS	DCSFMS	LU	LPR	LS	Pocket size	Head
TIS200F25-3	20 - 20.9	25	32	63.1	92.1	56	20	SMP20*
TIS210F25-3	21 - 21.9	25	32	66.3	95.1	56	21	SMP21*
TIS220F25-3	22 - 22.9	25	32	69.4	98.4	56	22	SMP22*
TIS230F25-3	23 - 23.9	25	32	72.6	101.4	56	23	SMP23*
TIS240F32-3	24 - 24.9	32	40	75.7	110.7	60	24	SMP24*
TIS250F32-3	25 - 25.9	32	40	78.9	113.7	60	25	SMP25*

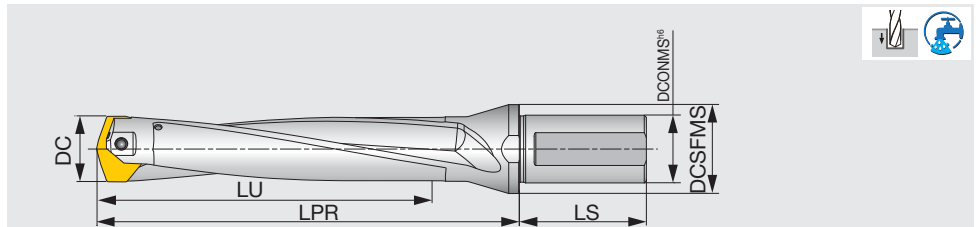
Tool diameter	Hole diameter tolerance*
ø20 - ø25.9	+0.05 / 0

\* Just for reference.

## TIS L/D=5

Head indexable drill

**New**



Designation	DC	DCONMS	DCSFMS	LU	LPR	LS	Pocket size	Head
TIS200F25-5	20 - 20.9	25	32	103.1	132.1	56	20	SMP20*
TIS210F25-5	21 - 21.9	25	32	108.3	137.1	56	21	SMP21*
TIS220F25-5	22 - 22.9	25	32	113.4	142.4	56	22	SMP22*
TIS230F25-5	23 - 23.9	25	32	118.6	147.4	56	23	SMP23*
TIS240F32-5	24 - 24.9	32	40	123.7	158.7	60	24	SMP24*
TIS250F32-5	25 - 25.9	32	40	128.9	163.7	60	25	SMP25*

Tool diameter	Hole diameter tolerance*
ø20 - ø25.9	+0.08 / 0

\* Just for reference.

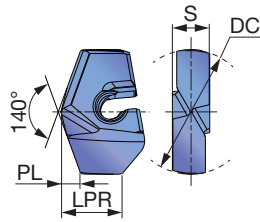
## SPARE PARTS



Designation	Clamping screw	Wrench	
		Torx Bit	Grip
TIS200F25-*	TS40178D25	BLDT20/S7	H-TB2W
TIS210F25-*	TS40178D25	BLDT20/S7	H-TB2W
TIS220F25-*	TS40198D28	BLDT20/S7	H-TB2W
TIS230F25-*	TS40198D28	BLDT20/S7	H-TB2W
TIS240F32-*	TS40210D3	BLDT20/S7	H-TB2W
TIS250F32-*	TS40210D3	BLDT20/S7	H-TB2W

## SMP

**New**



<b>Tool diameter</b>	<b>Head diameter tolerance</b>
ø20 - ø25.9	-0.006 / -0.026

<b>P</b> Steel	★
<b>M</b> Stainless	★
<b>K</b> Cast iron	★
<b>N</b> Non-ferrous	☆
<b>S</b> Superalloys	★
<b>H</b> Hard materials	★

★ : First choice  
☆ : Second choice

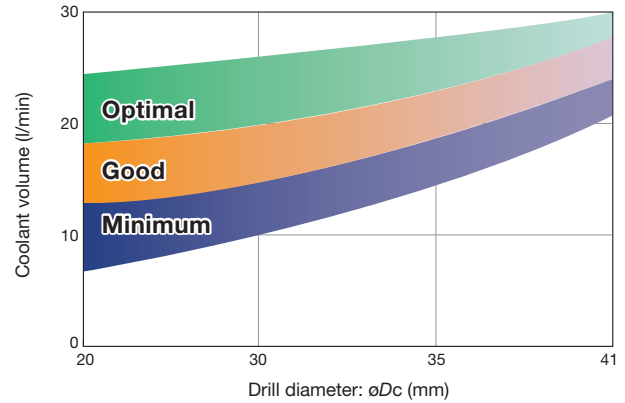
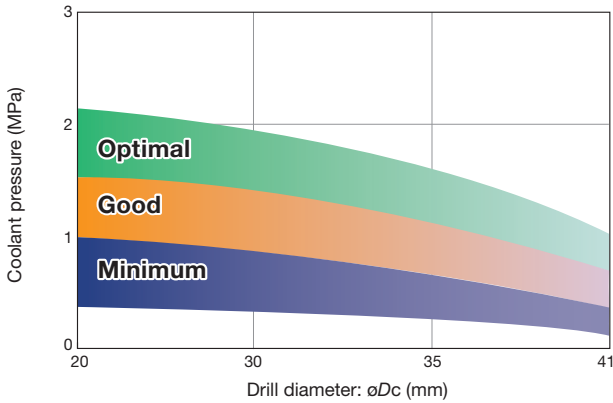
Designation	DC	S	Coated								LPR	PL	Pocket Size	Body
			AH725											
SMP200	20	5.7	●								9.7	3.11	20	TIS200F25-*
SMP205	20.5	5.7	●								9.7	3.2	20	TIS200F25-*
SMP210	21	5.7	●								9.7	3.29	21	TIS210F25-*
SMP215	21.5	5.7	●								9.7	3.38	21	TIS210F25-*
SMP220	22	6.2	●								10.5	3.42	22	TIS220F25-*
SMP223	22.3	6.2	●								10.5	3.47	22	TIS220F25-*
SMP225	22.5	6.2	●								10.5	3.51	22	TIS220F25-*
SMP230	23	6.2	●								10.5	3.6	23	TIS230F25-*
SMP235	23.5	6.2	●								10.5	3.69	23	TIS230F25-*
SMP240	24	6.7	●								10.8	3.73	24	TIS240F32-*
SMP245	24.5	6.7	●								10.8	3.82	24	TIS240F32-*
SMP247	24.7	6.7	●								10.8	3.86	24	TIS240F32-*
SMP250	25	6.7	●								10.8	3.91	25	TIS250F32-*
SMP255	25.5	6.7	●								10.8	4	25	TIS250F32-*

● : Line up

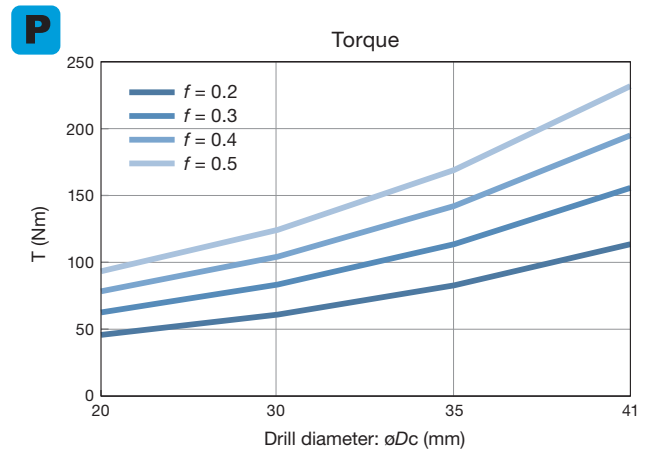
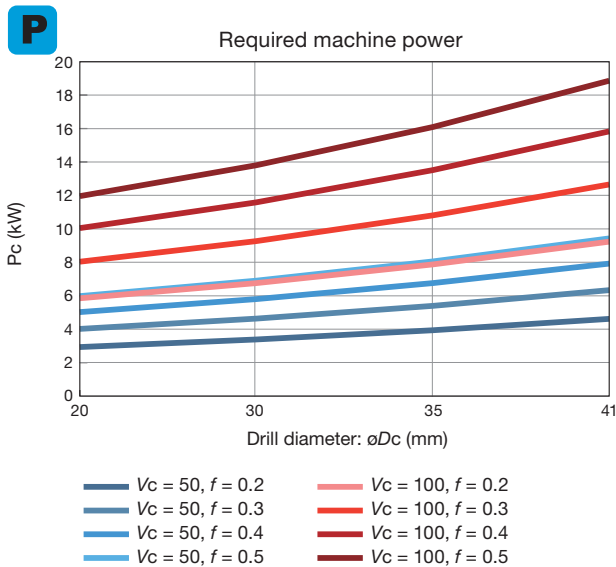
## STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Cutting speed Vc (m/min)	Feed: f (mm/rev)
			øDc (mm) 20 - 25.9
<b>P</b>	Low carbon steel (C15, C20, etc.)	80 - 140	0.2 - 0.5
	Carbon steel and alloy steel (S55C / C55, SCM440 / 42CrMo4, etc.)	80 - 130	0.2 - 0.5
	Prehardend steel (NAK80, PX5, etc.)	50 - 100	0.2 - 0.5
<b>M</b>	Stainless steel (SUS304 / X5CrNi18-9, SUS316 / X5CrNiMo17-12-3, etc.)	40 - 80	0.15 - 0.3
<b>K</b>	Grey cast iron (FC250 / 250, FC300 / 300, etc.)	80 - 180	0.25 - 0.55
	Ductile cast iron (400-15, 600-3, etc.)	80 - 140	0.25 - 0.55
<b>N</b>	Non ferrous materials	100 - 200	0.4 - 0.6
<b>S</b>	Heat-resistant alloys (Inconel718, etc.)	30 - 60	0.1 - 0.2
	Titanium alloys (Ti-6Al-4V, etc.)	20 - 50	0.1 - 0.2
<b>H</b>	Hardened materials	20 - 60	0.1 - 0.2

## RECOMMENDED COOLANT PRESSURE AND VOLUME



## REQUIRED MACHINE POWER AND TORQUE



- Please access to "Tungaloy machining power" to calculate more detailed cutting forces.

<https://www.imc-i.com/mpwr/MachiningPower>



## HOW TO CHANGE DRILL HEAD


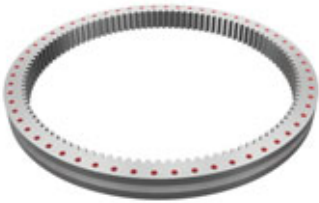
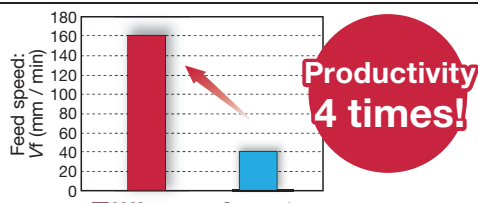
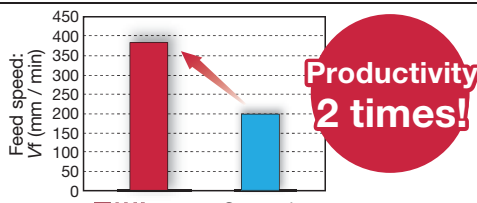
To unclamp rotate the screw 3-5 times counter-clockwise.



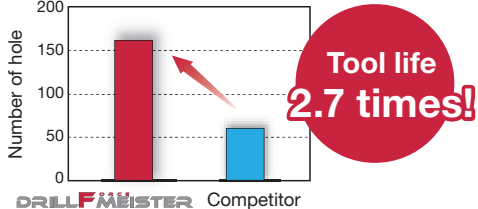
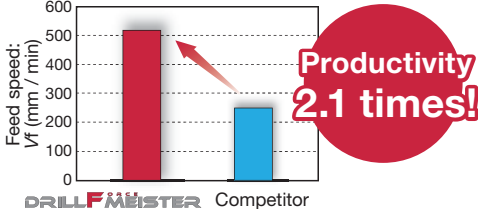
No need to remove the screw from the body.



- Please change the screw to new one when the screw does not rotate smoothly

## PRACTICAL EXAMPLES

Workpiece type	Gate valve	Slewing ring	
Drill	TIS300F40-5	TIS330F40-5	
Head	SMP300	SMP331	
Grade	AH725	AH725	
Workpiece material	SUS304 / X5CrNi18-9	SCM440 / 42CrMo4	
	 <b>M</b>	 <b>P</b>	
Cutting conditions	Cutting speed: $V_c$ (m/min)	60	100
	Feed : $f$ (mm/rev)	0.25	0.4
	Feed speed : $V_f$ (mm)	160	380
	Drilling depth : $H$ (mm)	120	150
	Machine	Horizontal M/C	Vertical M/C
Results	 <p><b>Productivity 4 times!</b></p> <p>DrillForceMeister provides 4 times productivity than HSS drill.</p>	 <p><b>Productivity 2 times!</b></p> <p>DrillForceMeister provides 2 times productivity and more stable hole diameter compare with indexable drill.</p>	

Workpiece type		Link	Plate	
Drill		TIS320F40-5	TIS260F32-3	
Head		SMP321	SMP260	
Grade		AH725	AH725	
Workpiece material		SCM440 / 42CrMo4	SN490B	
		 <b>M</b>	 <b>P</b>	
Cutting conditions	Cutting speed: $V_c$ (m/min)	60	120	
	Feed : $f$ (mm/rev)	0.15	0.35	
	Feed speed : $V_f$ (mm)	90	514	
	Drilling depth : $H$ (mm)	43	22	
	Machine	Horizontal M/C	Vertical M/C	
Results	 <p><b>Tool life 2.7 times!</b></p> <p>DRILLFMEISTER Competitor</p> <p>DrillForceMeister provides 2.7 times tool life than head changeable drill.</p>		 <p><b>Productivity 2.1 times!</b></p> <p>DRILLFMEISTER Competitor</p> <p>DrillForceMeister provides 2.1 times productivity than indexable drill.</p>	

## Tungaloy Corporation (Head office)

11-1 Yoshima-Kogyodanchi  
Iwaki-city, Fukushima 970-1144 Japan  
Phone: +81-246-36-8501  
Fax: +81-246-36-8542  
www.tungaloy.co.jp

## Tungaloy America, Inc.

3726 N Ventura Drive  
Arlington Heights, IL 60004, U.S.A.  
Phone: +1-888-554-8394  
Fax: +1-888-554-8392  
www.tungaloy.com/us

## Tungaloy Canada

432 Elgin St. Unit 3  
Brantford, Ontario N3S 7P7, Canada  
Phone: +1-519-758-5779  
Fax: +1-519-758-5791  
www.tungaloy.com/ca

## Tungaloy de Mexico S.A.

C Los Arellano 113,  
Parque Industrial Siglo XXI  
Aguascalientes, AGS, Mexico 20290  
Phone: +52-449-929-5410  
Fax: +52-449-929-5411  
www.tungaloy.com/mx

## Tungaloy do Brasil Ltda.

Avd. Independencia N4158 Residencial Flora  
13280-000 Vinhedo, São Paulo, Brasil  
Phone: +55-19-38262757  
Fax: +55-19-38262757  
www.tungaloy.com/br

## Tungaloy Germany GmbH

An der Alten Ziegelei 1  
D-40789 Monheim, Germany  
Phone: +49-2173-90420-0  
Fax: +49-2173-90420-19  
www.tungaloy.com/de

## Tungaloy France S.A.S.

ZA Courtaboef - Le Rio  
1 rue de la Terre de feu  
F-91952 Courtaboef Cedex, France  
Phone: +33-1-6486-4300  
Fax: +33-1-6907-7817  
www.tungaloy.com/fr

## Tungaloy Italia S.r.l.

Via E. Andolfato 10  
I-20126 Milano, Italy  
Phone: +39-02-252012-1  
Fax: +39-02-252012-65  
www.tungaloy.com/it

## Tungaloy Czech s.r.o.

Turanka 115  
CZ-627 00 Brno, Czech Republic  
Phone: +420-532 123 391  
Fax: +420-532 123 392  
www.tungaloy.com/cz

## Tungaloy Ibérica S.L.

C/Miquel Servet, 43B, Nau 7  
Pol. Ind. Bufalvent  
ES-08243 Manresa (BCN), Spain  
Phone: +34 93 113 1360  
Fax: +34 93 876 2798  
www.tungaloy.com/es

## Tungaloy Scandinavia AB

Bultgatan 38  
442 40 Kungälv, Sweden  
Phone: +46-462119200  
Fax: +46-462119207  
www.tungaloy.com/se

## Tungaloy Rus, LLC

Andropova avenue, h.18/7,  
11 floor, office 3, 115432,  
Moscow, Russia  
Phone: +7-499-683-01-80  
Fax: +7-499-683-01-81  
www.tungaloy.com/ru

## Tungaloy Polska Sp. z o.o.

Ul. Iryszowa 1, 55-040 Bielany  
Wroclawskie, Poland  
Phone: +48 607 907 237  
www.tungaloy.com/pl

## Tungaloy U.K. Ltd

Gallan Park, Watling Street,  
Cannock, WS110XG, UK  
Phone: +44 121 4000 231  
Fax: +44 121 270 9694  
www.tungaloy.com/uk

## Tungaloy Hungary Kft

Erzsébet királyné útja 125  
H-1142 Budapest, Hungary  
Phone: +36 1 781-6846  
Fax: +36 1 781-6866  
www.tungaloy.com/hu

## Tungaloy Turkey

Serifali Mah.bayraktar Bulvari Kule Sk. No:26  
34775 Umraniye / Istanbul / Turkey  
Phone: +90 216 540 04 67  
Fax: +90 216 540 04 87  
www.tungaloy.com/tr

## Tungaloy Benelux b.v.

Tjalk 70  
NL-2411 NZ Bodegraven, Netherlands  
Phone: +31 172 630 420  
Fax: +31 172 630 429  
www.tungaloy.com/nl

## Tungaloy Croatia

Ulica bana Josipa Jelačića 87,  
10430, Samobor, Croatia  
Phone: +385 1 3326 604  
Fax: +385 1 3327 683  
www.tungaloy.com/hr

## Tungaloy Cutting Tool (Shanghai) Co.,Ltd.

Rm No 401 No.88 Zhabei  
Jiangchang No.3 Rd  
Shanghai 200436, China  
Phone: +86-21-3632-1880  
Fax: +86-21-3621-1918  
www.tungaloy.com/cn

## Tungaloy Cutting Tools (Taiwan) Co.,Ltd.

9F, No.293, Zhongyang Rd,  
Xinzhuang Dist, New Taipei City,  
24251 Taiwan  
Phone: +886-2-8521-9986  
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www.tungaloy.com/tw

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Interlink tower 4th Fl.  
1858/5-7 Bangna-Trad Road  
km.5 Bangna, Bangna, Bangkok 10260  
Thailand  
Phone: +66-2-751-5711  
Fax: +66-2-751-5715  
www.tungaloy.com/th

## Tungaloy Singapore (Pte.), Ltd.

62 Ubi Road 1, #06-11 Oxley BizHub 2  
Singapore 408734  
Phone: +65-6391-1833  
Fax: +65-6299-4557  
www.tungaloy.com/sg

## Tungaloy Vietnam

LE04.38, Lexington Residence  
67 Mai Chi Tho St., Dist. 2,  
Ho Chi Minh City, Vietnam  
Phone: +84-2837406660  
www.tungaloy.com/sg

## Tungaloy India Pvt. Ltd.

Indiabulls Finance Centre,  
Unit # 902-A, 9th Floor,  
Tower 1, Senapati Bapat Marg,  
Elphinstone Road (West),  
Mumbai-400013, India  
Phone: +91-22-6124-8804  
Fax: +91-22-6124-8899  
www.tungaloy.com/in

## Tungaloy Korea Co., Ltd

#1312, Byucksan Digital Valley 5-cha  
Beotkkot-ro 244, Geumcheon-gu  
153-788 Seoul, Korea  
Phone: +82-2-2621-6161  
Fax: +82-2-6393-8952  
www.tungaloy.com/kr

## Tungaloy Malaysia Sdn Bhd

50 K-2, Kelana Mall, Jalan SS6/14  
Kelana Jaya, 47301  
Petaling Jaya, Selangor Darul Ehsan  
Malaysia  
Phone: +603-7805-3222  
Fax: +603-7804-8563  
www.tungaloy.com/my

## Tungaloy Australia Pty Ltd

Unit 68 1470 Ferntree Gully Road  
Knoxfield 3180 Victoria, Australia  
Phone: +61-3-9755-8147  
Fax: +61-3-9755-6070  
www.tungaloy.com/au

## PT. Tungaloy Indonesia

Kompleks Grand Wisata Block AA-10 No.3-5  
Cibitung  
Bekasi 17510, Indonesia  
Phone: +62-21-8261-5808  
Fax: +62-21-8261-5809  
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